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Characterization of Geodesic Acoustic Modes and a Lower-Frequency Zonal Flow Feature in DIII-D with BES[1] D.K. GUPTA, R.J. FONCK, G.R. MCKEE, D.J. SCHLOSSBERG, M.W. SHAFER, U. Wisconsin.-Madison — The spatiotemporal characteristics of geodesic acoustic mode (GAM) and lower-frequency zonal flows are examined and compared with theoretical predications as a function of safety factor, q and elongation. High time resolution poloidal turbulence flow velocities are determined from multi-point beam emission spectroscopy (BES) data using time-delay-estimation analysis. Localized 2D measurements of density fluctuation are obtained in L-mode plasmas over $0.6< r/a<1.0$ during a q_{95} and elongation scan. Observed increase of the GAM amplitude with increasing q_{95} is qualitatively consistent with theoretical understanding. The GAM magnitude also increases with r/a. A broad, low-frequency feature in poloidal velocity fluctuation, suggestive of the "residual" (Rosenbluth-Hinton) zonal flow, is observed from 0-10 kHz with zero poloidal phase difference, similar to the GAM, but also exhibits little radial phase shift, in contrast to the GAM. The feature persists deeper into the core. Its radial structure and magnitude are explored.

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